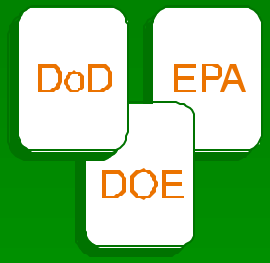



SERDP

Strategic Environmental Research and Development Program


# Overview of the SERDP & ESTCP Programs

Andrea Leeson

Cleanup Program Manager

# Strategic Environmental Research & Development Program


- Mr. Bradley P. Smith
- Executive Director

# FY 1991 Defense Authorization Act

- Established SERDP
  - DoD, DOE and U.S. EPA partnership
- Purposes
  - Address DoD and DOE environmental concerns through R&D
  - Share data collection and analysis capabilities
  - Identify and share DoD research technology
  - Identify private sector technologies useful to DoD
- Organization and Procedures
  - Council
  - Executive Director
  - Scientific Advisory Board

# SERDP Pillars

UXO

POLLUTION PREVENTION

CLEANUP

COMPLIANCE

CONSERVATION

# SERDP/ESTCP Combined Program Office

**Executive Director**
Bradley Smith

**Technical Director / ESTCP**
Jeff Marqusee

**Admin Officer**
Brenda Batch

**Prg Mgr for Pollution Prevention**
Charles Pellerin

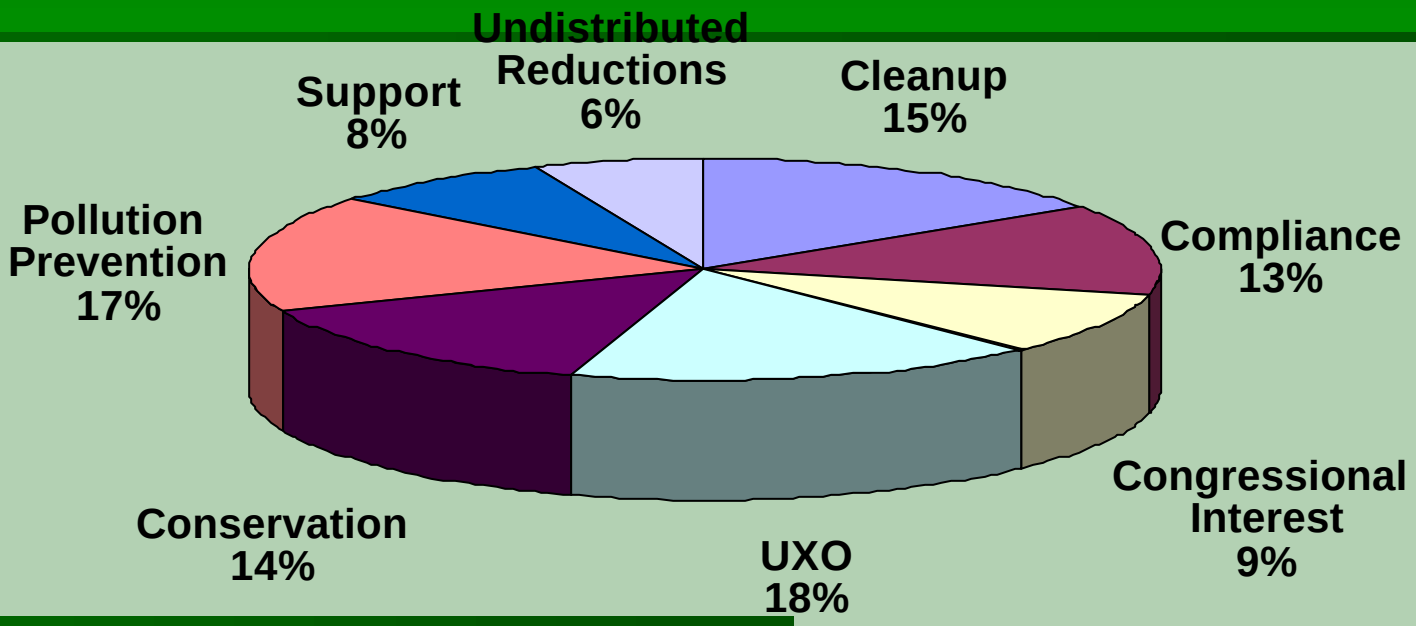
**Prg Mgr for Compliance & Conservation**
Robert Holst

**Prg Mgr for UXO**
Anne Andrews

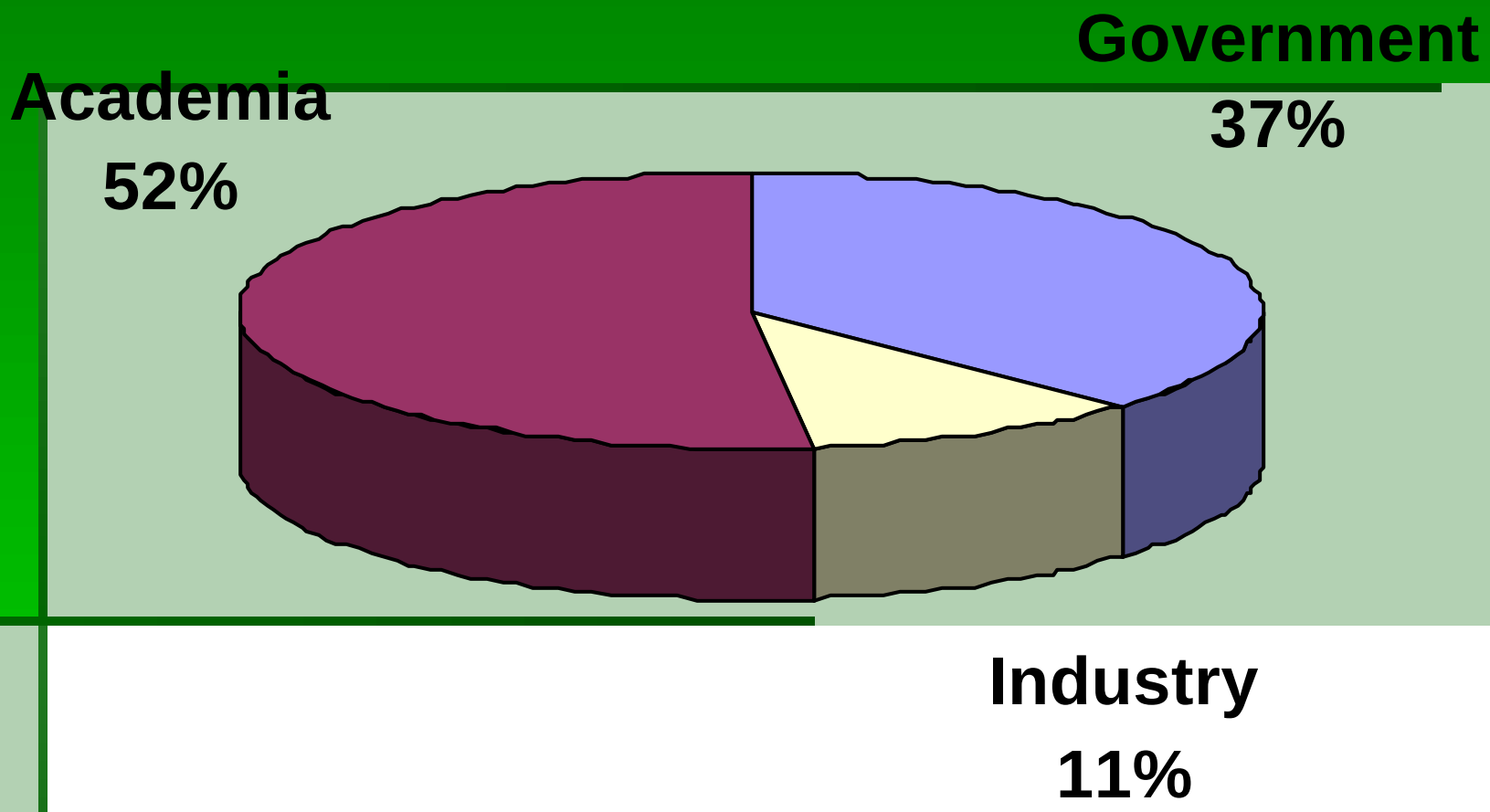
**Prg Mgr for Cleanup**
Andrea Leeson

**Program Support**
HydroGeoLogic, Inc

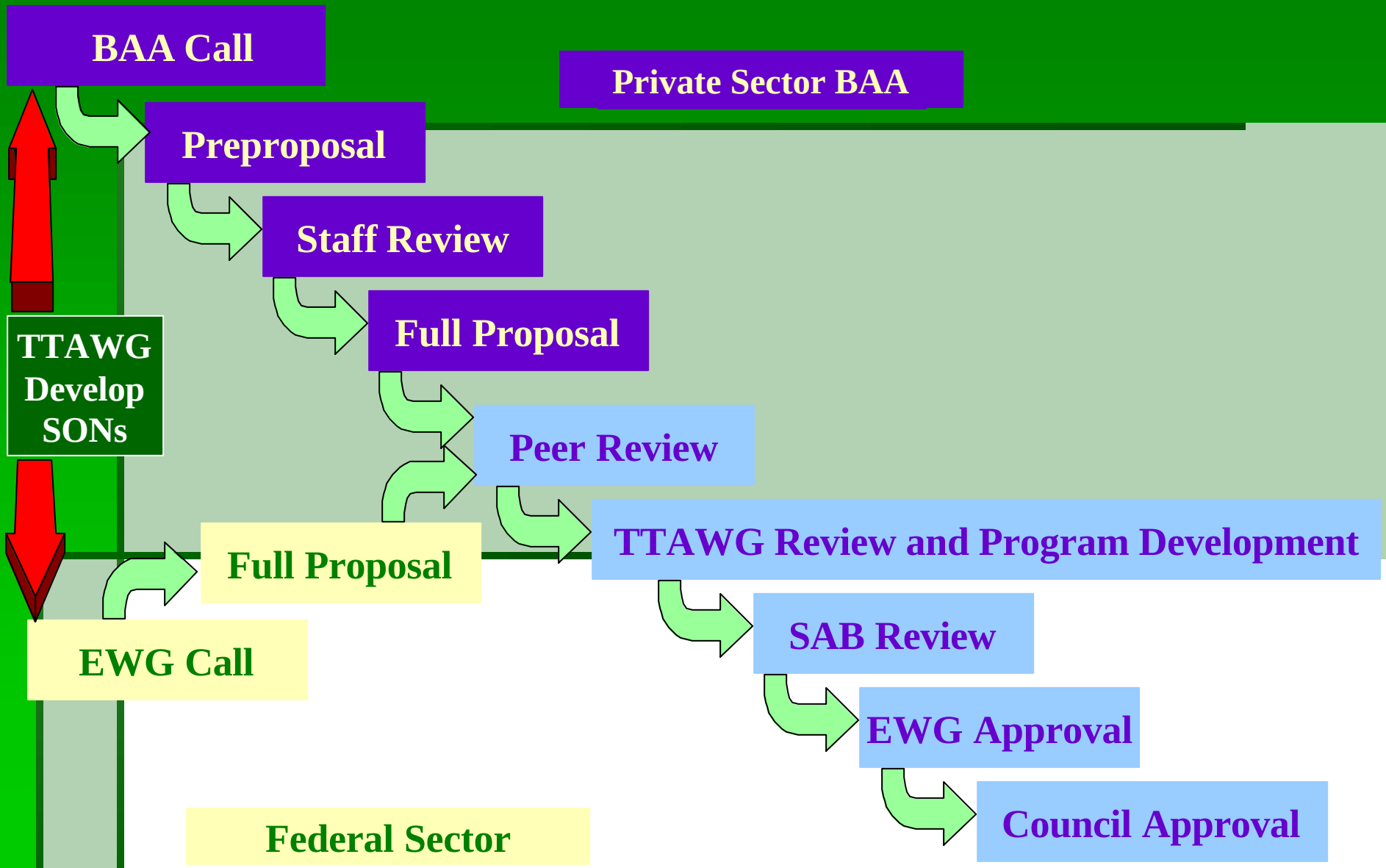
# SERDP FY 03 Budget



# SERDP FY 03 Selections



# SERDP Solicitation Process



# SERDP FY04 Cleanup Statement of Needs

- Innovative and Low Cost Methods for Measuring Hydraulic Conductivity
- Investigation of Abiotic Attenuation Processes Impacting Dissolved Chlorinated Solvents
- Assessing Impacts of In-Place Remedial Strategies for Contaminated Sediment Remediation
- Development of Remedial Technologies for

# SERDP FY04 Compliance Statement of Needs

- Prediction Model For Weapons Noise Sources From Airborne Platforms
- Improved Methods and Monitoring Systems For Impulse Noise
- Characterization and Prediction of Military Generated Noise On Structures
- Particulate Matter Emission Factors For Dust From

# SERDP FY04 Conservation Statement of Needs

- Control of Non-Indigenous Invasive Plant Species Affecting Military Testing and Training Activities
- Marine Mammal Behavioral Ecology and Predictive Modeling
- Development of Innovative Inventory and Monitoring Techniques For High Priority Threatened and Endangered Species

# SERDP FY04 Pollution Prevention SONs

- Alternatives For Ammonium Perchlorate in DoD Missile Propulsion Applications
- Environmentally Benign Alternative For Cadmium Plating On High Strength Steels
- Alternatives For Class II Ozone Depleting Substance Solvents For DoD Precision Cleaning Applications

# SERDP FY04 UXO Statement of Needs

- Advanced Approaches to Unexploded Ordnance (UXO) Detection and Discrimination
- Innovative Technology For Identification of Filler Material In Recovered Unexploded Ordnance
- Site Characterization and Remediation

# SERDP Internet Resources


http://www.serdp.org

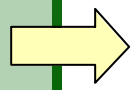
# Environmental Security Technology Certification Program



- Dr. Jeffrey Marqusee
- Director

# Program Goals

- Demonstrate Innovative Cost-Effective Environmental Technologies
  - Capitalize on past investments
  - Transition technology out of the lab
- Promote Implementation
  - Direct technology insertion
  - Gain regulatory acceptance



***Priority: needs of the DoD user community***

# Technical Areas

## Cleanup

- Site Characterization
- Remediation
- Monitoring

➡ *protect communities & reduce cleanup costs*

## Compliance

- Detection and Monitoring
- Emission Reduction
- Disposal

➡ *reduce impact on operations*

## Unexploded Ordnance

- Detection & Discrimination
- Removal & Disposal
- Land & Water

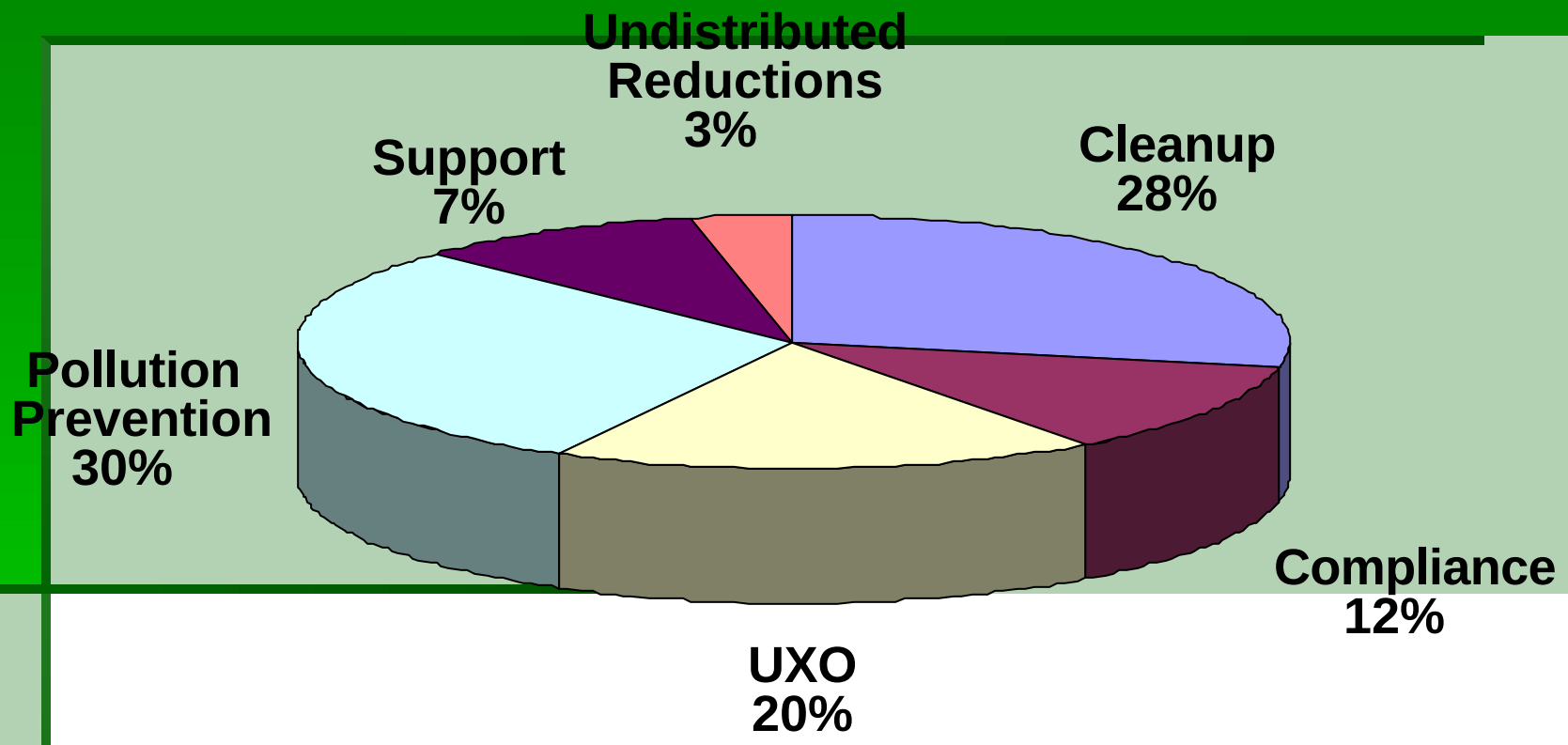
➡ *risk & costs reduction*

## Pollution Prevention

- Alternative Maintenance
- Alternate Manufacturing
- Material Replacement
- Recycling

➡ *reduce mission impacts & improve readiness*

# ESTCP FY03 Funds



# ESTCP Methodology

- Partner With Stakeholders and Test at DoD Facilities
  - Developer, regulators, end-user
  - Direct transition
- Validate Operational Cost and Performance
  - Independent test and evaluation
  - Satisfy regulatory and user communities
- Identify DoD Market Opportunities
  - Technology transfer across federal and private sector

# Project Requirements

- Formal Demonstration Plans
  - independent review
- Execution of Technology Demonstration
  - collect cost and performance data
- Written reports on cost and performance
  - technical report
  - Cost and Performance Summary Report
- Support for transition
  - regulatory and end-user acceptance
  - guidance and training

# DoD Call

- Call for Dem/Val Projects
  - Address DoD environmental requirements
- Competitive Two Phase Process
  - DoD lead
- Phase I: technology selection
  - short written pre-proposal
  - modifications recommended
- Phase II: final prioritization
  - full proposal
  - oral presentations
  - forge partnerships

# BAA
# - creating partnerships-

- Call for Technologies
  - selected topic areas
- Pre-proposal White Papers
  - short written pre-proposal
  - competitive process
  - technology down select
- Identify DoD Partners
  - develop Dem/Val project
-
  -
  -

# ESTCP FY04 DoD Topic Areas

- Cleanup
  - Remediation
  - Site Characterization
  - Site Monitoring
- Pollution Prevention
  - Material Substitution
  - Alternative Maintenance
- Unexploded Ordnance
  - Site Characterization
  - Remediation
  - Cued Identification
- Compliance
  - Emission Monitoring
  - Emission Control

# ESTCP FY04 Non-DoD Federal Agency Topic Areas

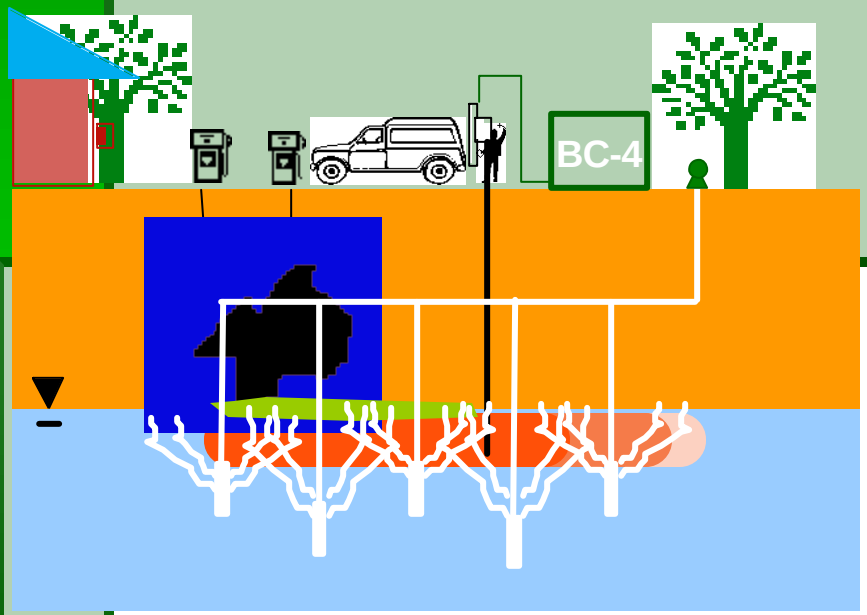
- Topic 1: Unexploded Ordnance (UXO) Detection, Discrimination, and Remediation
- Topic 2: In Situ Remediation of Contaminated Sediments
- Topic 3: Characterization and Treatment of Range Contamination
- Topic 4: In Situ Remediation of Groundwater

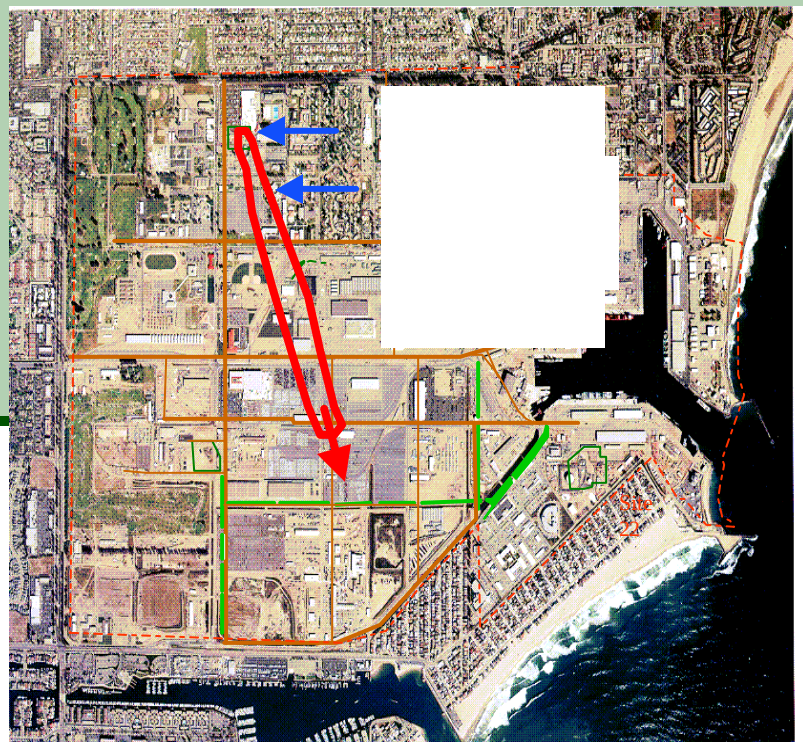
# ESTCP FY04 BAA Topic Areas

- Topic 1: Unexploded Ordnance (UXO) Detection, Discrimination, and Remediation
- Topic 2: In Situ Remediation of Contaminated Sediments
- Topic 3: Characterization and Treatment of Range Contamination
- Topic 4: In Situ Remediation of Groundwater

# Bioremediation of MTBE Plume

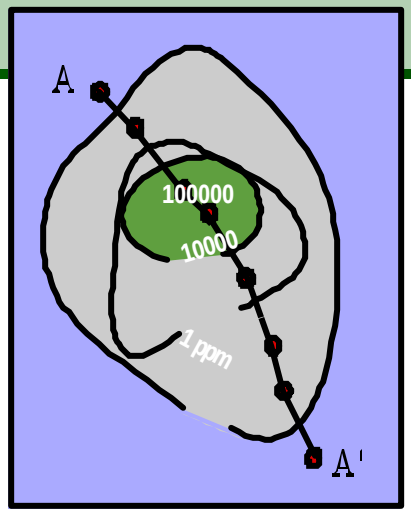
- Installation of biobarrier that compared impact of bioaugmentation, $O_2$ addition, & traditional air sparging for treatment of MTBE plume
- Bioaugmentation resulted in complete destruction of contaminants
- National Ground Water Association project of the year
- Transferred to base for implementation
- Cost reduction from $54M to $3 M

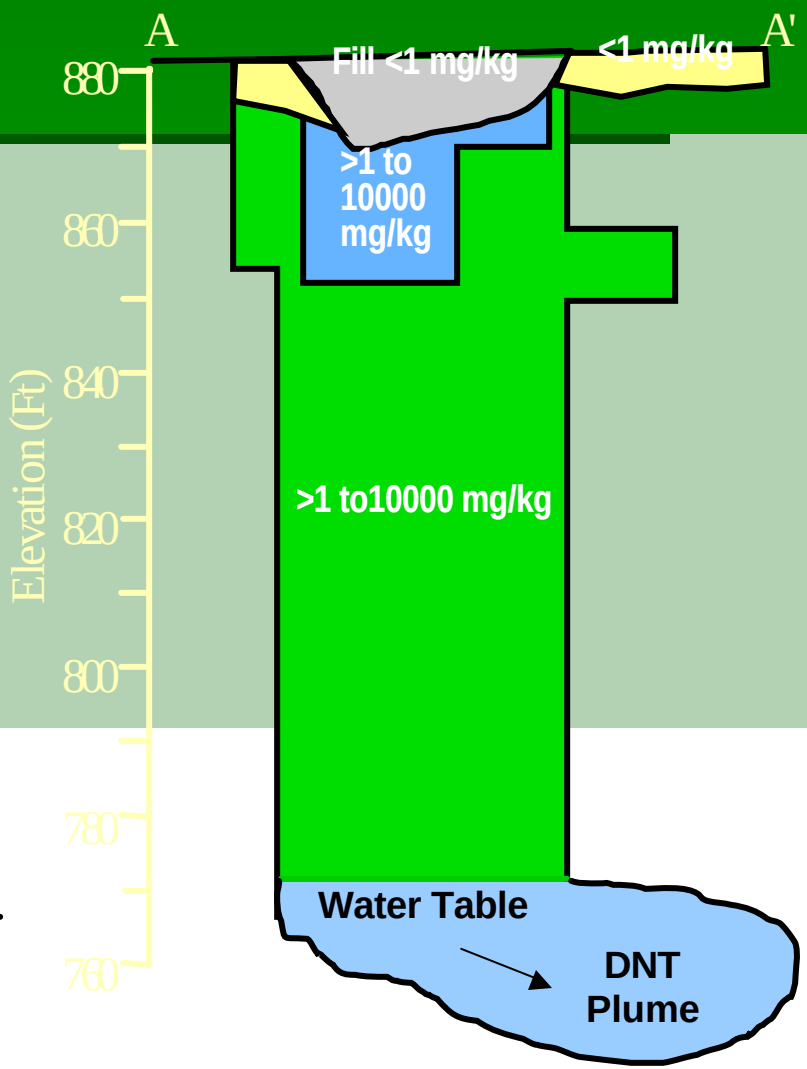


# Bioremediation of DNT Badger AAP

- Laboratory scale evaluations of soil samples, and bench-scale treatability studies, provided the basis for application of bioremediation technologies to the Badger site.
- Bioremediation at Badger had a cost reduction from $75M (dig and haul) to $10M (in-situ treatment)
- Time reduction for total [illegible] to be



# Detection of TNT in Soil

- Used at contaminated training/firing ranges to detect small amounts of TNT in soils.
- Exploit existing amplifying fluorescent polymer (AFP) technology for the problem of wide-area detection of energetic compounds
- Develop standoff detection methods based on AFP technology that are:
  - Highly sensitive
  - Adaptable to a stand-off sensor
  - May be used from a mobile platform

# Perchlorate Bioremediation

- SERDP-funded 3 inter-related in situ remediation projects
  - Focused on basic microbiology, bench- scale, and field-scale research
- Results indicate that perchlorate is degradable by indigenous microbes
- To stimulate bioactivity, simple, inexpensive additives such as m
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- S
  pr
  pe
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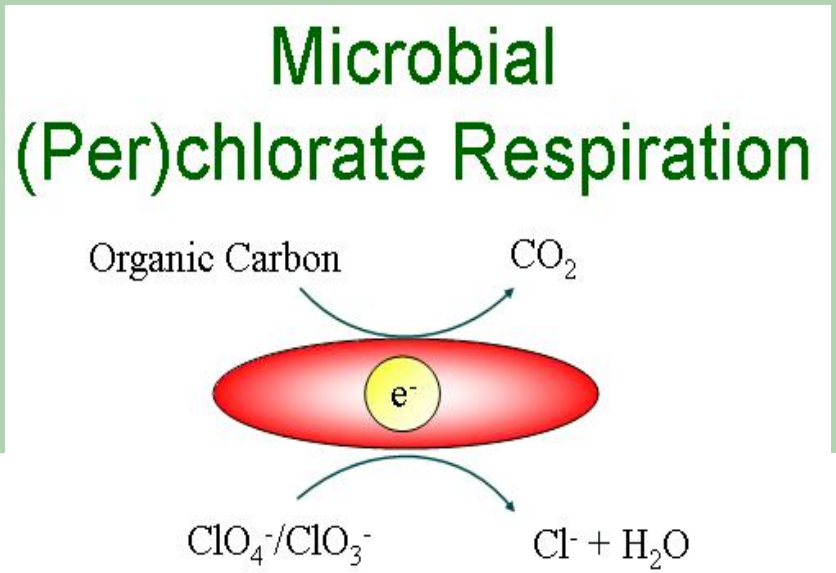

# Cost and Performance Reports

- Joint Small Arms Range Remediation
- Multi-Site In Situ Air Sparging (CU-9808)
- Natural Attenuation of Explosives in Groundwater
- Permeable Reactive Wall Remediation of Chlorinated Hydrocarbons in Groundwater
- Quantifying In Situ Metal Contaminant Mobility in Marine Sediments
- Surfactant Enhanced DNAPL Removal
- SCAPS Hydrosparge VOC Sensor
- SCAPS Membrane Interface Probe
- SCAPS Thermal Desorption Sampler for VOCs
- SCAPS Heavy Metal Sensors
- Use of Cometabolic Air Sparging to Remediate Chloroethene-Contaminated Groundwater
- In Situ Remediation of MTBE Contaminated Aquifers

# Technology Assessments

- Research & Development Needs for Cleanup of Chlorinated Solvent Sites
- Groundwater Circulating Well Technology Assessment
- In Situ Electrokinetic Remediation of Metal Contaminated Soils: Technology Status Report
- Bioremediation of Dinitrotoluene (DNT): Technology Status Report
- In Situ Oxidation: Technology Status Report

# Protocols

- Treatability Test for In Situ Anaerobic Dechlorination (CU-9719)
- Air Sparging Design Paradigm (CU-9808)
- Protocol for Evaluating, Selecting, and Implementing MNA at Explosives-Contaminated Sites (CU-9518)
- Design Guidance for Application of Permeable

# Internet Resources

ESTCP
Environmental Security
Technology Certification Program

http://www.estcp.org